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ABSTRACT

The Roger Tory Peterson Institute (Jamestown, New York) has been sparking a regional revival in K-12 nature studies and attracting attention from educators across America. Through summer training sessions and workshops, the Institute introduces multidisciplinary teams of teachers and community members to empirical research techniques for observing and documenting the biophysical and cultural characteristics of their local communities. The Selborne Project, upon which this program is based, encouraged educators to use the one square kilometer surrounding their schools as a living science laboratory, where students learn about natural and human systems and how they interact. Teachers and students use all their senses on regular expeditions to their square kilometer, keeping detailed field notes, making careful sketches, and entering data into personal journals. Human activities or artifacts, such as natural resource use and past architectural styles, receive as much scrutiny as natural components. This instills pride in the local region, which is important in many rural areas that may be seen as deteriorating. Field research is supplemented by visits to local libraries, searches through government records or reports, and Internet searches. The resulting interest in the local community often sparks service learning projects in which students learn the importance of giving back to the community. Many schools affiliated with the program have developed local networks of volunteers, business leaders, and government workers, transforming their schools into more community-oriented institutions. (TD)

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Roger Tory Peterson Institute Links Interdisciplinary Nature Studies to Increased Community Understanding

By Elizabeth Higgins Null

Since 1993, Jamestown New York's Roger Tory Peterson Institute has been sparking a regional revival in K-12 nature studies and attracting attention from educators across America. In a series of summer training sessions and workshops for teachers (augmented by conferences, curricular resources, and follow-up consultations), the Institute introduces multi-disciplinary teams of educators, some individual teachers, and deeply involved community members to empirical research techniques for observing and documenting the biophysical and cultural characteristics of their local communities.

New participants enroll in an introductory five-day summer workshop where they work on the observational skills they will soon impart to students in intense interdisciplinary units, usually six to eight weeks long, which focus on their school's immediate environment. Using nearby land as a living science laboratory, students will learn about natural and human systems and how they interact.

Teachers who attend a three-day "renewal institute" in subsequent summers evaluate and revise the curricula they themselves designed for the recently completed school year. In the process, they add to their outdoor research techniques, present their ideas to less experienced teachers, and share student work and teaching methods with other educators facing similar challenges.

The original educational program, known as the Selborne Project, encouraged middle school teaching teams to concentrate on one square kilometer surrounding a particular school. "All nature is so full, that that district produces the greatest variety which is the most examined, "wrote naturalist Gilbert White in *The Natural History and Antiquities of Selborne* (1788), a collection of letters rich with detailed observations about the natural and social world of an eighteenth-century English village.

This classic work, still in print today, had a profound influence on later nature writers such as Henry David Thoreau and lent its name to the Roger Tory Peterson Institute's educational initiative. Two years ago, the program expanded its reach to teachers at

Nearby Casadaga Creek (Chautauqua County) offers an opportunity for teachers attending Roger Tory Peterson Institute's summer training sessions to sharpen their observational skills.

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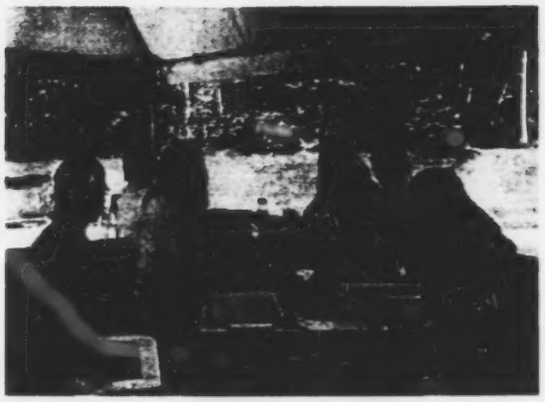


These teachers, who work with children from the Seneca Nation, are attending a summer educational institute at the Roger Tory Peterson Institute for the first time.

all grade levels. A name change from the "Selborne Project" to "Teaming with Nature" was decided upon at that time in order to clarify the program's educational objectives and to underscore an increasingly collaborative relationship between participating schools and their communities.

In this spirit, the Institute's staff, with the input of natural scientists, teachers, students, and community members from southwestern New York and northwestern Pennsylvania, is creating a *Natural History Atlas to the Chautauqua-Allegheny Region* along with a related teaching guide. The Atlas' purpose is to enhance school and community awareness of the region's rich ecological and aesthetic diversity and to encourage educational field trips to sites beyond the basic one-kilometer study area.

Local photographers, including teachers and students, submitted photos of places they care about, some familiar and others known to only a few. The collaborators hope that these images will inspire teachers, parents, and students to explore these sites as spaces for outdoor learning. Sixty of these photographs are in a traveling exhibit throughout the area and were displayed at the Roger Tory Peterson Institute itself when it hosted "Speaking with One Voice: A Conference on Education and the Environment," October 11-13, 2001. About 100 of these photographs are included in the Atlas, which also celebrated its publication at that time.

One thing that has not changed is that teachers and their students learn to utilize all their senses on regular expeditions to their special, nearby "km^2," keeping detailed field notes and entering data into personal journals. Teachers and students also learn to sketch careful representations of plants, insects, and animals and to identify them using guides written and illustrated by the prominent naturalist for whom the Institute is named. A student's illustrations are also likely to become part of his or her journal record. Mark Baldwin, the Institute's education director, advocates drawing an accurate record of what the eye sees. He says:

> Teachers are surprised to learn that the techniques that Roger and others have used are available to them too...that a working knowledge of how to draw is accessible to ordinary people in the same way that a working knowledge of how to write is.

In addition to representational drawing's ability to "enhance the powers of observation," Baldwin believes that it can also contribute to creative thinking:

> Through the act of sketching an actual object, a person visually records, and therefore internalizes, the sensual information present, which is at the heart of the creative process.

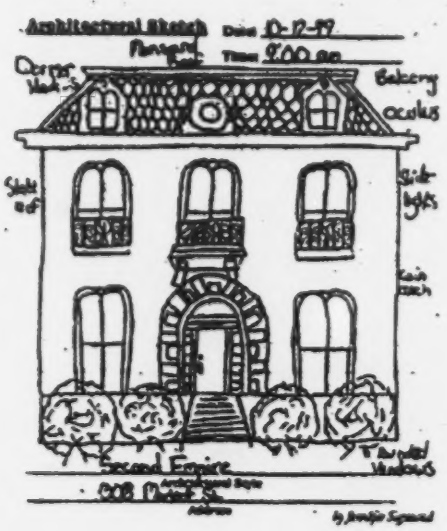
Brandi John, a teacher with the Seneca Nation and a first-time participant in the 2001 Teaming with Nature summer institute, works on her field journal.

Far more important than any artistic result, to Baldwin, is the entire process of "journaling" and representing what one sees. "It's the doing it that counts," he emphasizes.

Many skills Teaming with Nature students are encouraged to acquire can, with advance planning, be made to correlate with state learning standards—especially in science, mathematics, language arts, and social studies. Seasoned teachers who have participated in the Selborne Project or Teaming with Nature have devised a number of lesson plans and exercises which the Roger Tory Peterson Institute has edited, illustrated, and aligned with Pennsylvania and New York standards of learning.

These have just been published in a loose-leaf volume, *Learning About Our Place,* available to educators who participate in the Institute's programs. Although teachers at individual schools devise their own curricula to suit local resources and other specific subject needs, virtually all students learn to measure natural phenomena on a regular, recurring basis. They compile statistics, create graphs, maps, and field guides as they learn to interpret and compare accumulated data.

Student work often assumes a historical and economic dimension as children explore their



Jennifer Sigmund, from Beaty Warren Middle School (Warren, PA) has sketched a "Second Empire" house located at 308 Market St. She notes such features as dormer windows, balcony, oculus, and a slate roof.

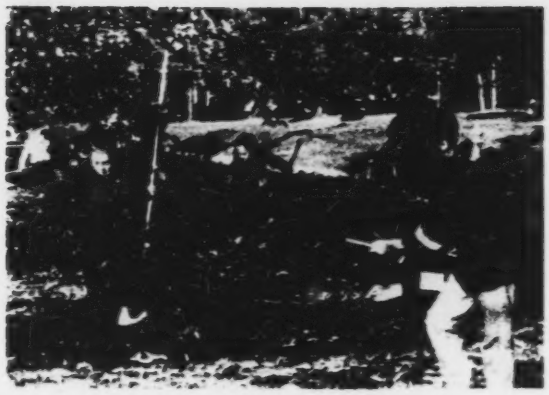
Even an undramatic area of lawn yields surprising scientific data when observed in great detail over time.

community's past and present use of natural resources. Like Gilbert White, they also investigate all aspects of the one square kilometer they study, and human activities or artifacts receive as much scrutiny as other, more conventional components of nature study.

Just as they learn to draw and identify local trees, children also practice drawing and identifying regional architectural styles—noting those structural details that help them classify a variety of building types and periods. As they deepen their appreciation of the area's natural surroundings, they also develop an appreciation for its architectural heritage, discovering that "newer" is not always "better."

This is an important insight to have in southwestern New York and northwestern Pennsylvania. This region has been economically depressed for some years, and young people too often assume that there is little worth staying at home after graduating from school and college. Local community activists and government leaders stress that instilling pride in the region's unique natural and aesthetic environment is essential to community revitalization. This is one reason they contribute their time and support to Teaming with Nature activities.

Students at Persell Middle School in Jamestown New



Four members of Jefferson Middle School's 6th grade "Rake Brigade" clean up a yard in the square kilometer near their school they call "Our Little Corner of the World."

York, discovered that several local residents they met on their field trips were frustrated with the lack of downtown businesses and services. Pursuing the issue further, the young researchers developed and administered a survey with such questions as, "What is the number one problem you see about Jamestown?"

They also asked respondents if they would spend more time and money downtown if there were more attractions. In designing their questions and analyzing the results, students moved seamlessly from a study of the natural environment to an investigation of human and social problems. With the results in hand, students spoke directly with Mayor Sam Teresi during a visit he paid to the school. According to the local newspaper, *The Post-Journal* (8/11/00), eighth grader Liz Skoczykas asked the mayor:

> Most people said that they would put their own business downtown if there were more people there to buy their products. What can you do to bring more people in?

The Mayor responded by discussing possible solutions directly with the students. One possibility he shared was a plan to attract more tourists to the area.

Teaming with Nature students get plenty of practice writing formal business letters. They also develop social skills as they collect narratives, opinions, and reminiscences from area residents, business operators, and government officials. Field research of this sort is supplemented by visits to the local library, searches through government records or reports, and quests over the Internet. Children either work alone or in teams writing up reports and delivering oral presentations.

They also learn the importance of giving back to the community through student-initiated service projects. These often involve improving life for local residents or cleaning up public facilities. Students from Jefferson Middle School in Jamestown, New York, contacted the Chautauqua County Office of the Aging for names of neighborhood residents who might need help with yard work. One day, the students raked and bagged leaves for 15 nearby homes, and were delighted to see what a big difference their efforts could make. They received

Two girls from the Nashoba Brooks School, an independent school in Concord Massachussetts, present their poems about a red fox with a shared title and illustration. Several schools from this state have particpated in "Selborne New England," evidence that RTPI's educational influence is growing. The poems were written as part of a unit on local predators.

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From left to right: Jefferson Middle School 6th graders made six visits to the shopping center, Southside Plaza, situated within the square kilometer surrounding their school. They studied local businesses, conducted interviews, and wrote reports. Here, they are identifying geometric shapes used in the Plaza's sign; these Chautauqua Lake Middle School students are examining a cottage in the historic part of Chautauqua; children often take walks in large groups with many adults accompanying them. While there are more children to supervise, teacher responsibility is also shared, and a larger group can break up into smaller, informal groups based on walking pace, interests, or friendships. These children, from Russell Elementary School (Russell, PA) are paying a visit to Johnny Run.

several thank you letters including one from Mrs. Veda Stubbs:

> With the arthritis that I have in my arms, it makes it very difficult to do a lot that I would like to. So I do appreciate all the help I can get.

Mrs. Geraldine Lundberg was equally appreciative: "God bless the children with such big hearts for helping us senior citizens!"

Although they strive for accuracy and objectivity when collecting data, students have ample opportunity to express their more subjective observations and thoughts. Monitoring their senses forces them to listen to what they feel when encountering the outside world. Children regularly record both objective observations and subjective reflections in the personal journals they carry with them on outings. Referring to their handwritten entries and sketches, Teaming with Nature students frequently turn their thoughts into poetry. Their observational skills pay off if they combine emotional reactions to nature with deftly chosen descriptive details. The young writers may be asked to express themselves within the challenging constraints of such poetic forms as haiku, cinquains, diamantes, and concrete pattern poetry—often illustrated with drawings of plants and animals. Sometimes, they write their thoughts in a foreign language.

The children explore the one square kilometer around their school by foot. They use simple measurement tools and employ few technological devices more complex than a compass. This is a rare chance to encounter nature without mediation, relying on personal ingenuity, stamina, and their innate capacity for observing, remembering, and understanding. They learn to explore with an open mind and to be on the alert for patterns and changes in the organisms and natural systems they discover. This sort of pedagogical approach is empirically inductive. It is less important to assemble proof for a hypothesis than to develop a comprehensive and systematic understanding of the terrain under surveillance.

Sometimes children make inventories of what they find in a fixed area of space. They may map the neighborhood they are researching, including plants and animals, buildings, and historical or mnemonic data as well as geographical features. In other school projects, each child may assume responsibility for, say, five square meters of a larger plot.

He or she will note every aspect of that little microcosm, searching above and below stones and leaves

for insects, lichens, and other living things. It becomes important to count the ants and worms, note the spread of roots or germination of seeds, and observe how their small corner of Earth and its inhabitants are affected by rain and other climate changes.

In carrying out such an intensive monitoring process over time, children learn that systematic observation must be disciplined and thorough if the data they collect is to be reliable. Through trial and error, children begin to see a need for careful notes and clear, detailed sketches. Gradually, from seemingly random observations, patterns and trends emerge which take on added significance when students compare their data with that compiled by schoolmates working nearby.

Unlike classroom lectures and formal discussions, lessons on field trips take place in a relaxed and collegial atmosphere. Teachers who work in a team, often accompanied by parent volunteers, feel less frazzled than they do when responsibility lies solely on their shoulders. Children may run around letting off steam, but soon discover more focused ways of channeling their energy, such as searching for toads and insects or exploring a stream.

Most settle down to work individually or in small groups, chattering and sharing observations as they tackle the day's objectives. Teachers appreciate the opportunity to observe their students in a new, friendlier light; students enjoy moving about and talking freely with their friends.

Top: A young naturalist identifies woodland species with the help of a field guide written by Roger Tory Peterson. Bottom: Aya Marshall,from Red Springs Middle School in Robeson County, North Carolina, spends a reflective moment journaling as she stands near a group of flowers. Marshall attended this summer's introductory teacher training institute at the Roger Tory Peterson Institute.

The Selborne Project Program Evaluation Report, by J. William Hug with Juhu Kim and J. Daniel Marshall (2000), indicates that participating teachers welcome an opportunity to get to know their students outside the school building. Many students who do poorly in class display a knack for fieldwork. One such student was described by his teacher as a failing and often disruptive student in class. Outside, however, the situation was quite different:

> This student excelled at leading student groups, initiating conversations with community members, fearlessly catching animals for the class to observe, and describing animal habits in great detail.

The evaluators believe that the program "puts teachers and students into a different context where both can learn about talents not apparent in traditional classroom activities." Indifferent students reported to evaluators that they learned more and were challenged more than most students who made higher grades in classroom work.

In 1996, the Roger Tory Peterson Institute received a $508,524 grant, spread over five years, from the Annenberg Rural Challenge, (now the Rural School and Community Trust). One of the earliest grantees, it was also one of the few organizations operating outside a public school system, university, or consortium of K-12 educators.

Nevertheless, it builds on educational traditions kept alive for generations by American nature centers through their camps, workshops, after-school activities, and adult education programs. The Institute's staff are as committed to the learning process as any of the teachers who attend one or more of their summer training sessions.

The Selborne Project, started in 1993, had already established itself in schools, local and national, public, parochial, and private. It had begun to help move "nature studies" from extracurricular and recreational status to the center of a school's curriculum—not by demanding recognition as a core subject, but by integrating its empirical techniques and study of local social and natural environments with other content topics and pedagogical goals.

The Institute's emphasis on systematic, trained observation of the world in which one lives is not a new idea, as the work of Gilbert White or Henry David Thoreau can testify. Anyone who has seen the notebooks of 19th-century school children, complete with exercises in perspective and carefully labeled botanical drawings, will sense that the Roger Tory Peterson Institute and Teaming with Nature is reconnecting today's teachers and students with skills we have almost forgotten how to acquire. These skills, easily learned, provide renewed means of encountering the world. Such learning, once relegated to the margins, can work itself into the center of many topics, projects, and subjects. It adds rather than competes. Once it is rediscovered, it becomes irresistible because, in the refrain of most participating students, "it's fun" and engages mind, hand, and spirit.

Although the Roger Tory Peterson Institute's educational approach offers much to city children, its demonstrated ability to enrich rural education was what caught the Rural Trust's attention in the first place. No programs are more committed to cultivating a sense of place, however one defines it. In the last two years, Teaming with Nature has encouraged students and teachers to look closely at the social, as well as the natural, systems that affect their lives. The seeing eye and the skilled hand are equally useful in both domains.

Julie Bartsch, Northeast steward for the Rural Trust, has been helping the Roger Tory Peterson Institute link its programs with the culturally, ecologically and economically diverse needs of schools elsewhere in the country.

Top: Marcus Schultz, a 6th grader attending Beaty Warren Middle School, has sketched and identified this local house as "Tudor: 1910-1913." He includes arrows pointing to many significant details. Students at this school learn to see 20th century house design as part of a longer, stylistic continuum. Bottom: Andre Wallace, from Jamestown's Jefferson Middle School, presents a map of the 6th grade's kilometer study area. The map was created by participating students

Left: These students are learning first-hand about outflow from a waste water treatment plant. The pipe is draining into Chautauqua Lake, known as a major flyway for many migrating species of birds. Right: Police chief Al Akin of the Chautauqua Institution (a historic summer attraction for vacationers drawn by its architectural charm and cultural events) talks with local middle school students about his work.

Teams of teachers and community leaders from other Rural Trust network sites have attended the Institute's last two introductory summer workshops—teams from Albemarle and Robeson County, North Carolina; East Feliciana Parish, Louisiana; West Las Vegas, New Mexico; and Vermont and California. Bartsch says their feedback has been enthusiastic and that participants have introduced what they recently learned into many facets of student instruction. Institute staff members have visited some of these schools, providing on-site support. Some of the rural schools realize their small size and workforce can be a positive asset: interdisciplinary integration has long been an acknowledged fact of life.

Roger Tory Peterson Institute staff members also have found that learning is a two-way process. Mary Richardson, the new project director of Teaming with Nature says teachers have shown her "how critical it is for them to have scheduling flexibility, common planning time, and the support of their school administrators." Teachers also have pointed out that implementing Teaming with Nature throughout a particular school sometimes runs into opposition from other teachers committed to their own methods and priorities. The Roger Tory Peterson Institute nevertheless welcomes individual teachers as well as those working in teams, but tries to make sure that even "self-contained teachers" have cooperation and understanding from their supervisors and other members of the school community.

Whether a nature-based education program can truly transform a school into a more community-oriented institution is "by no means certain," Bartsch cautions, even as she applauds the steps many schools in northwestern Pennsylvania and southwestern New York have taken to do so. These schools have been affiliated with the Peterson Institute program for years and have built up a network of enthusiastic volunteers, resource people, business leaders, and government workers in their home communities. In some cases, support is stronger outside the school walls than within them, where there may be those who resist doing things differently. Even in such situations, however, there is hope. Teachers, children and adults create a leapfrog effect when they study outside in the parks, fields, and streets of their towns or villages. Older and younger folk get to check each other out on a regular basis, becoming familiar enough to share stories or lend each other a helping hand across the generations. When this happens, the community becomes a learning center with beautiful and surprising resources for all to share.

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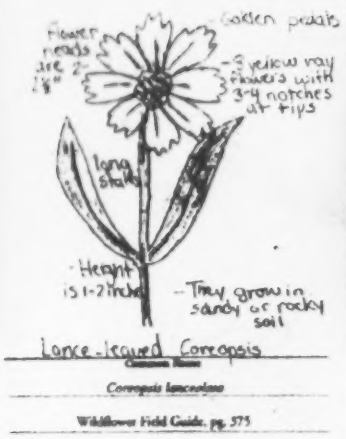
Golden petals
-3 yellow ray flowers with 3-4 notches at tips
long stalks
Height is 1-2 inches
-They grow in sandy or rocky soil
Lance-leaved Coreopsis
Coreopsis lanceolata
Wildflower Field Guide, pg. 575

From left to right: Students from A.B. Hart Middle School in Cleveland, Ohio measure the circumference of a tree. This school has successfully carried out the Roger Tory Peterson Institute programs in an urban environment. While exploring the neighborhood around their school and nearby sites, they have studied graveyards, ethnic neighborhoods, and a network of blocks, streets and alleys; Courtney Baughman, a 6th grade student from Beaty Warren Middle School in Warren, Pennsylvania, sketched this lance-leaved coreopsis in her field notebook. Parts of the plant are described and measured so that they may be more easily identified when using a guide. She includes the plant's Latin name as well as a bibliographic citation; sometimes the local community is drawn into an awareness of worlds far larger than itself. Here, in 1996, Chautauqua Lake 6th graders receive a visit from President Clinton, who was paying a visit to their community.

THE RURAL SCHOOL AND COMMUNITY TRUST

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